Hyman wins Fraunhofer Award

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Jeffrey De'Haven Hyman of LANL's Computational Earth Science group has received the 2015 Award for Young Researchers from the International Society for Porous Media (InterPore), on behalf of the Fraunhofer Institute for Industrial Mathematics. This award is presented to young researchers who have completed a doctorate within the past three years and who are making outstanding research contributions in the areas of porous and composite materials modeling and computer simulation. Hyman is recognized as a leader in the accurate modeling of pore scale flow and transport in diverse and complex pore structures.Hyman received the award during the 2015 InterPore conference in Padova, Italy. As the award winner, he has been invited to spend approximately three months on joint research at the Fraunhofer Institute for Industrial Mathematics.

Hyman’s achievements

Hyman received a doctorate in applied mathematics with a minor in hydrology and water resources from the University of Arizona. In 2015, the Laboratory’s Center for Nonlinear Studies (CNLS) awarded him postdoctoral funding to pursue research at the Lab. Hyman splits his time between CNLS and EES-16.

Hyman’s research in applied mathematics and subsurface hydrology has advanced the understanding of complex subsurface hydrological systems and has revealed subtle links between porous media structure and flow and transport dynamics. He used high performance computing to create detailed physical simulations of flow in large, kilometer-scale, fracture networks and small, micrometer-scale, explicit pore microstructures. These simulations require the stochastic generation of realistic fracture networks and pore-structures based on geological data, one of Hyman’s areas of expertise. He is a core developer of the computational software suite dfnWorks where his specialty is the generation of the fracture network and analysis of Lagrangian transport simulations.

About InterPore

The International Society for Porous Media (InterPore) aims to advance and disseminate knowledge for the understanding, description, and modeling of natural and industrial porous media systems. Porous media are encountered in many natural and industrial systems: soils, aquifers, oil and gas reservoirs, biological tissues and plants, fuel cells, concrete, textiles, polymer composites, and in-tissue drug delivery. Many of these porous systems are extremely complex; therefore, traditional concepts, models, and algorithms are not directly applicable to describe them. Interpore aims to develop theories, models and measurement techniques that apply specifically to complex porous media and that are transferable between different applications.

The Fraunhofer Institute for Industrial Mathematics focuses on the development of mathematical applications for industry, technology, and economy. The main emphases are surface quality inspection, financial mathematics, visualization of large data sets, optimization of production processes, virtual material design and analysis of 3-D models of microstructures. Since its foundation in 1995, the Fraunhofer Institute has built mathematical bridges between applied sciences and concrete applications.